



SEQUENCE LISTING

<110> CHOO, Yen  
ULLMAN, Christopher G.

<120> MOLECULAR SWITCHES

<130> 8325-2004 / G8-US1

<140> 09/996,484  
<141> 2001-11-28

<160> 64

<170> PatentIn Ver. 2.0

<210> 1  
<211> 995  
<212> DNA  
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:  
TFIIIA/Zif-VP16

<400> 1

tctagagcgc cgccatggga gagaaggcgc tgccgggtgg gtataagcgg tacatctgct 60  
cttcgcccga ctgcggcgct gcttataaca agaactggaa actgcaggcg catctgtgca 120  
aacacacagg agagaaaacca tttccatgtta aggaagaagg atgtgagaaaa ggctttacct 180  
cgcttcatca cttaaccgc cactcactca ctcatactgg cgagaaaaac ttcacatgtg 240  
actcggatgg atgtgacttg agatttacta caaaggcaaa catgaagaag cactttaaca 300  
gattccataaa catcaagatc tgcgtctatg tgcgtccatt tgagaactgt ggcaaagcat 360  
tcaagaaaaca caatcaatta aaggttcatc agttcagtca cacacagcag ctggcgatg 420  
cttgcctgt cgagtcctgc gatcgccgct tttctcgctc ggatgagctt acccgccata 480  
tccgcatcca cacaggccag aagcccttc agtgcgat ctgcgtcgat aacttcagtc 540  
gtagtgacca ccttaccacc cacatccgca cccacacagg cgagaaggct ttgcctgtg 600  
acatttgtgg gaggaagttt gccaggatgt atgaacgaa gaggcataacc aaaatccatt 660  
taagacagaaa ggacgcggcc gcactcgagc ggaattccgg cccaaaaaaag aagagaaaagg 720  
tcgccccccc gaccgatgtc agcctggggg acgagctcca cttagacggc gaggacgtgg 780  
cgatggcgca tgccgacgct ctagacgatt tcgatctgga catgttgggg gacggggatt 840  
ccccggggcc gggatttacc ccccacgact ccgcctcta cggcgctctg gatacggccg 900  
acttcgagtt tgagcagatg ttaccgatg cccttggaaat tgacgagtac ggtggggaaac 960  
aaaaacttat ttctgaagaa gatctgtaaag gatcc 995

<210> 2

<211> 947

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:TFIIIA/Zif-VP64

<400> 2

tctagagcgc cgccatggga gagaaggcgc tgccgggtgg gtataagcgg tacatctgct 60  
cttcgcccga ctgcggcgct gcttataaca agaactggaa actgcaggcg catctgtgca 120  
aacacacagg agagaaaacca tttccatgtta aggaagaagg atgtgagaaaa ggctttacct 180  
cgcttcatca cttaaccgc cactcactca ctcatactgg cgagaaaaac ttcacatgtg 240  
actcggatgg atgtgacttg agatttacta caaaggcaaa catgaagaag cactttaaca 300

gattccataa catcaagatc tgcgtctatg tggccattt tgagaactgt ggcaaagcat 360  
tcaagaaaca caatcaatta aaggttcatc agttcagtca cacacagcag ctgccgtatg 420  
cttgcctgt cgagtcctgc gatcgccgt tttctcgctc ggatgagctt acccgccata 480  
tccgcattcca cacagccag aagcccttcc agtgcgaat ctgcattcgat aacttcagtc 540  
gtagtgacca ccttaccacc cacatccgca cccacacagg cgagaaggct tttgcctgtg 600  
acatttgtgg gaggaagtggt ggcaggagtg atgaacgcaa gaggcatacc aaaatccatt 660  
taagacagaa ggacgcggcc gcaactcgagc ggaattccgg cccaaaaaag aagagaaagg 720  
tcgaacttca gctgacttcg gatgcattag atgactttga cttagatatg ctaggatctg 780  
acgcgctaga cgatttcgat ctggacatgt tggcagcga tgctctgac gatttcgatt 840  
tagatatgct tggctcgat gcccctggatg acttcgacct cgacatgctg tcaagtcagc 900  
tgagccagga aaaaaactt atttctgaag aagatctgtt aggatcc 947

<210> 3

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: TFIIA/Zif  
binding site

<400> 3

tgcgtggcgtgtacctggatggagacc

29

<210> 4

<211> 31

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: zinc finger  
framework

<220>

<221> SITE

<222> (1)..(2)

<223> can be present or absent; Xaa = any amino acid

<220>

<221> SITE

<222> (4)..(8)

<223> Xaa = any amino acid

<220>

<221> SITE

<222> (5)..(8)

<223> can be present or absent

<220>

<221> SITE

<222> (10)..(23)

<223> Xaa = any amino acid

<220>

<221> SITE

<222> (19)..(23)

<223> can be present or absent

<220>  
<221> SITE  
<222> (25)..(30)  
<223> Xaa = any amino acid

<220>  
<221> SITE  
<222> (28)..(30)  
<223> can be present or absent

<220>  
<221> SITE  
<222> (31)  
<223> Xaa = His or Cys

<400> 4  
Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa His Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
20 25 30

<210> 5  
<211> 24  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: zinc finger  
binding motif

<220>  
<221> SITE  
<222> (1)  
<223> Xaa = any amino acid

<220>  
<221> SITE  
<222> (3)..(6)  
<223> Xaa = any amino acid

<220>  
<221> SITE  
<222> (5)..(6)  
<223> may be present or absent

<220>  
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<222> (8)..(10)  
<223> Xaa = any amino acid

<220>  
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<222> (10)  
<223> may be present or absent

<220>

<221> SITE  
<222> (12)..(16)  
<223> Xaa = any amino acid

<220>  
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<222> (18)..(19)  
<223> Xaa = any amino acid

<220>  
<221> SITE  
<222> (21)..(23)  
<223> Xaa = any amino acid

<400> 5  
Xaa Cys Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa Phe Xaa Xaa Xaa Xaa Xaa  
1 5 10 15  
Leu Xaa Xaa His Xaa Xaa Xaa His  
20

<210> 6  
<211> 4  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: linker

<400> 6  
Thr Gly Glu Lys  
1

<210> 7  
<211> 5  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: linker

<400> 7  
Thr Gly Glu Lys Pro  
1 5

<210> 8  
<211> 26  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: consensus  
structure

<400> 8

Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser Phe Ser Gln Lys Ser Asp  
1 5 10 15

Leu Val Lys His Gln Arg Thr His Thr Gly  
20 25

<210> 9  
<211> 29  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: consensus  
structure

<400> 9  
Pro Tyr Lys Cys Ser Glu Cys Gly Lys Ala Phe Ser Gln Lys Ser Asn  
1 5 10 15

Leu Thr Arg His Gln Arg Ile His Thr Gly Glu Lys Pro  
20 25

<210> 10  
<211> 6  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: leader  
peptide

<400> 10  
Met Ala Glu Glu Lys Pro  
1 5

<210> 11  
<211> 17  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: plant  
translational initiation sequence

<400> 11  
aaggagatat aacaatg 17

<210> 12  
<211> 10  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: plant  
translational initiation sequence

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<400> 12
gtcgaccatg 10

<210> 13
<211> 60
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
      oligonucleotide

<400> 13
ctcctgcagt tggacctgtg ccatggccgg ctggggccca tagaatggaa caactaaagc 60

<210> 14
<211> 10
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
      oligonucleotide target

<400> 14
aaaaaaaggcg 10

<210> 15
<211> 16
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
      oligonucleotide target

<400> 15
aaaaaaaggcg aaaaaa 16

<210> 16
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: zinc finger
      binding domain

<400> 16
Arg Ser Asp Glu Leu Thr Arg
  1           5

<210> 17
<211> 7
<212> PRT
<213> Artificial Sequence

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<220>  
<223> Description of Artificial Sequence: zinc finger  
binding domain

<400> 17  
Arg Ser Asp Asp Leu Ser Thr  
1 5

<210> 18  
<211> 7  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: zinc finger  
binding domain

<400> 18  
Arg Ser Asp Asp Leu Ser Val  
1 5

<210> 19  
<211> 7  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: zinc finger  
binding domain

<400> 19  
Arg Ser Asp Asp Leu Ser Gln  
1 5

<210> 20  
<211> 7  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: zinc finger  
binding domain

<400> 20  
Thr Asn Asn Thr Arg Ile Lys  
1 5

<210> 21  
<211> 7  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: zinc finger

binding domain

<400> 21  
His Lys Ala Thr Arg Ile Lys  
1 5

<210> 22  
<211> 7  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: zinc finger  
binding domain

<400> 22  
Thr Asp Lys Val Arg Lys Lys  
1 5

<210> 23  
<211> 7  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: zinc finger  
binding domain

<400> 23  
His Asn Ala Ser Arg Ile Asn  
1 5

<210> 24  
<211> 7  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: zinc finger  
binding domain

<400> 24  
Thr Asn Asn Ser Arg Lys Lys  
1 5

<210> 25  
<211> 7  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: zinc finger  
binding domain

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<400> 25
Thr Asn Ala Thr Arg Lys Lys
 1           5
  ⚡

<210> 26
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: zinc finger
      binding domain

<400> 26
Thr Arg Asn Thr Arg Lys Asn
 1           5

<210> 27
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: zinc finger
      binding domain

<400> 27
Thr Asn Asn Ser Arg Lys Asn
 1           5

<210> 28
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
      oligonucleotide

<400> 28
tataaaaaaaa ggcgtgtcac agtcagtcca cacgtc                         36
<210> 29
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
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<400> 29
tataaaaaaaa ggcgaaaaaaaa tcacagtcag tccacacgtc                         40
<210> 30

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<211> 12  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: zinc finger binding domain

<400> 30  
Arg Ser Asp Glu Leu Thr Arg His Ile Arg Ile His  
1 5 10

<210> 31  
<211> 12  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: zinc finger binding domain

<400> 31  
Arg Ser Asp Thr Leu Ser Val His Ile Arg Thr His  
1 5 10

<210> 32  
<211> 12  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: zinc finger binding domain

<400> 32  
His Asn Ala His Arg Lys Thr His Thr Lys Ile His  
1 5 10

<210> 33  
<211> 12  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: zinc finger binding domain

<400> 33  
Arg Ser Asp His Leu Ser Val His Ile Arg Thr His  
1 5 10

<210> 34  
<211> 16  
<212> PRT

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<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: zinc finger
      binding domain

<400> 34
Lys Lys Phe Ala His Ser Ala His Arg Lys Thr His Thr Lys Ile His
  1           5           10          15

<210> 35
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
      oligonucleotide

<400> 35
tataacaagct tggcgatcac agtcagtcac cacgtc                         36

<210> 36
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA library

<220>
<221> misc_feature
<222> (7)
<223> "n" is C or T

<220>
<221> misc_feature
<222> (8)
<223> "n" is G or A

<220>
<221> misc_feature
<222> (9)
<223> "n" is C or T

<220>
<221> misc_feature
<222> (10)
<223> "n" is G or A

<220>
<221> misc_feature
<222> (11)
<223> "n" is C or T

<400> 36
tatagtnnnn nggcgatcac agtcagtcac cacgtc                         36

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<210> 37  
<211> 12  
<212> PRT  
<213> Artificial Sequence  
  
<220>  
<223> Description of Artificial Sequence: zinc finger  
binding domain

<400> 37  
Arg Ser Asp His Leu Ser Lys His Ile Arg Thr His  
1 5 10

<210> 38  
<211> 16  
<212> PRT  
<213> Artificial Sequence  
  
<220>  
<223> Description of Artificial Sequence: zinc finger  
binding domain

<400> 38  
Lys Lys Phe Ala Arg Ser Gln Thr Arg Ile Asn His Thr Lys Ile His  
1 5 10 15

<210> 39  
<211> 12  
<212> PRT  
<213> Artificial Sequence  
  
<220>  
<223> Description of Artificial Sequence: zinc finger  
binding domain

<400> 39  
Arg Ser Asp His Leu Ser Glu His Ile Arg Thr His  
1 5 10

<210> 40  
<211> 12  
<212> PRT  
<213> Artificial Sequence  
  
<220>  
<223> Description of Artificial Sequence: zinc finger  
binding domain

<400> 40  
Thr Arg Asn Ala Arg Thr Lys His Thr Lys Ile His  
1 5 10

<210> 41  
<211> 12

<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: zinc finger  
binding domain

<400> 41  
Arg Ser Asp His Leu Ser Asn His Ile Arg Thr His  
1 5 10

<210> 42  
<211> 12  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: zinc finger  
binding domain

<400> 42  
Arg Asn Asp Thr Arg Lys Thr His Thr Lys Ile His  
1 5 10

<210> 43  
<211> 12  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: zinc finger  
binding domain

<400> 43  
Arg Ser Asp Asn Leu Ser Thr His Ile Arg Thr His  
1 5 10

<210> 44  
<211> 16  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: zinc finger  
binding domain

<400> 44  
Lys Lys Phe Ala His Ser Asn Thr Arg Lys Asn His Thr Lys Ile His  
1 5 10 15

<210> 45  
<211> 36  
<212> DNA  
<213> Artificial Sequence

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<220>
<223> Description of Artificial Sequence:
      oligonucleotide

<400> 45
tatagttacg tggcgatcac agtcagtcca cacgtc 36

<210> 46
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
      oligonucleotide

<400> 46
tatagttcta tggcgatcac agtcagtcca cacgtc 36

<210> 47
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
      oligonucleotide

<400> 47
tatagtcgta cggcgatcac agtcagtcca cacgtc 36

<210> 48
<211> 14
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA target

<400> 48
aaaaaagcgga aaaa 14

<210> 49
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: zinc finger
      binding domain

<400> 49
Gln Ser Arg Ser Leu Ile Gln
  1           5

<210> 50
<211> 7

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<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: zinc finger  
binding domain

<400> 50  
Gln Arg Asp Ser Leu Ser Arg  
1 5

<210> 51  
<211> 7  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: zinc finger  
binding domain

<400> 51  
Arg Ser Asp Glu Arg Lys Arg  
1 5

<210> 52  
<211> 7  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: zinc finger  
binding domain

<400> 52  
Arg Ser Asp Val Leu Ser Thr  
1 5

<210> 53  
<211> 7  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: zinc finger  
binding domain

<400> 53  
Thr Arg Ser Ser Arg Lys Lys  
1 5

<210> 54  
<211> 14  
<212> DNA  
<213> Artificial Sequence

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<220>
<223> Description of Artificial Sequence: operator site

<220>
<221> misc_feature
<222> (5)
<223> "n" is G or T

<220>
<221> misc_feature
<222> (6)..(9)
<223> "n" is A, C, G or T

<220>
<221> misc_feature
<222> (10)
<223> "n" is A or T

<400> 54
acaannnnnn ttgt 14

<210> 55
<211> 58
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: target DNA
sequence library

<220>
<221> misc_feature
<222> (28)..(31)
<223> "n" is A, C, G or T

<400> 55
gtcggatcct gtctgaggtg agacaatnnn natttgtct tccgacgtcg aattcgcg 58

<210> 56
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer A

<400> 56
gtcggatcct gtctgaggtg ag 22

<210> 57
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer B

<400> 57

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cgcgaattcg acgtcgaaag ac

22

<210> 58

<211> 14

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: operator sequence

<400> 58

acaataaata ttgt

14

<210> 59

<211> 14

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: plant translational initiation sequence

<400> 59

aaggagatat aaca

14

<210> 60

<211> 5

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: protein-binding motif

<220>

<221> SITE

<222> (2)

<223> Xaa = any amino acid

<220>

<221> SITE

<222> (4)

<223> Xaa = any amino acid

<400> 60

Leu Xaa Cys Xaa Glu

1

5

<210> 61

<211> 11

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: DNA

recognition site

<400> 61  
ggatgggaga c 11

<210> 62  
<211> 10  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: DNA  
recognition site

<400> 62  
gcgtgggcgt 10

<210> 63  
<211> 36  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: zinc finger 4  
of TFIIIA

<400> 63  
Asn Ile Lys Ile Cys Val Tyr Val Cys His Phe Glu Asn Cys Gly Lys  
1 5 10 15

Ala Phe Lys Lys His Asn Gln Leu Lys Val His Gln Phe Ser His Thr  
20 25 30

Gln Gln Leu Pro  
35

<210> 64  
<211> 108  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: zinc finger 4  
of TFIIIA

<400> 64  
aacatcaaga tctgcgtcta tgtgtgccat tttgagaact gtggcaaagc attcaagaaa 60  
cacaatcaat taaaggttca tcagttcagt cacacacagc agctgccg 108